



The construction and exploration of innovation platform-a case of “985”project in China

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RESUME

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Background

1. International: the concept of ‘NBIC’

Converging Technologies: Nano—
Biology—Information—Cognize)

2. Domestic: the national “985” project

To build the first-class university

3. The basic of national innovation system: the
construction of innovation platform



Innovation platform

- ✧ Based on the totalizing theory ,
converge multi discipline and
produce powerful resonance.

Characteristic: inter-disciplinary
inter-technology
cross-specialty



review the main history and success experience of discipline development in China:

1.the retrospection of China discipline, which divided into 5 phrases:

imitating phrase(1952-1963)、rudiment phrase(1963-1981)、modification phrase(1982-1987)、standard phrase(1989)、strategic phrase(1997-now);

2. the achievement of discipline development in China:

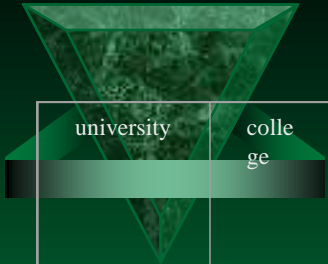
technological human resource、technological fund、technological task、international technological intercommunion、technological achievement.



the retrospection of China discipline

✓ The situation of discipline

period	The number of discipline	The characteristics of discipline
1952-1953	215	The basic discipline ,learn from soviet
1963	510	Declare the 《the general discipline outline for university》 and 《the secret discipline outline for university》 , establish the foundation of discipline
1982-1987	671	Revise and coordinate the discipline outline, settle the chaos situation of ten-year confusion in China. Strengthen and widen the new discipline.
1989	504	Standard ,speciality and collectivity .
1997-1998,7	249	Emphases on knowledge ,capability, diathesis.
now	249(inside)+111(outside)	Emphases on information science, biology science, new material science based on the strategy and whole coordination



The Distribution of college based on the discipline

university	college	humanities		science		management		industry		medicine		agriculture	
		number	Percentage	number	Percentage	number	Percentage	number	Percentage	number	Percentage	number	Percentage
Beijing University	21	7	33.3	5	23.8	2	9.5	2	9.5	5	23.8	0	0.0
Fudan university	13	5	38.5	1	7.7	1	7.7	2	15.4	4	30.8	0	0.0
Nanjing university	12	3	25.0	3	25.0	2	16.7	3	25.0	1	8.3	0	0.0
Tsinghua university	12	4	33.3	1	8.3	2	16.7	4	33.3	1	8.3	0	0.0
Shanghai Traffic university	17	4	23.5	2	11.8	1	5.9	7	41.2	2	11.8	1	5.9
Zhejinag university	21	5	23.8	3	14.3	1	4.8	9	42.9	2	9.5	1	4.8
XIAN Traffic University	16	2	12.5	2	12.5	2	12.5	7	43.8	3	18.8	0	0.0
total	112	30	26.8	17	15.2	11	9.8	34	30.4	18	16.1	2	1.8
average	16	4.3	26.8	2.4	15.2	1.6	9.8	4.9	30.4	2.6	16.1	0.3	1.8



the situation of discipline based on PHD degree

universit y	tot al		huma nities		scie nce		manage ment		indu stry		medi cine		agric ultrue	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Beijing university	26	41	7	20	9	1	1	4	5	1	4	15	0	0
Fudan university	20	19	7	1	4	0	2	2	3	3	4	13	0	0
Nanjing university	12	19	2	11	8	1	0	2	2	4	0	1	0	0
Tsinghua university	24	6	0	6	4	0	2	0	18	0	0	0	0	0
Shanghai traffic university	14	6	0	1	1	2	1	1	12	2	0	0	0	0
Zhejiang univerisity	28	27	2	9	4	1	2	2	16	1	0	12	4	2
Xian traffic university	14	11	1	0	0	5	2	0	10	3	1	3	0	0
total	138	129	19	48	30	10	10	11	66	14	9	44	4	2
average	19.7	18.4	2.7	6.9	4.3	1.4	1.4	1.6	9.4	2.0	1.3	6.3	0.6	0.3

A: the first-class discipline B: the second-class discipline



The achievements of higher education system

Technology Human resource	The total number of technology activities is 24.2m(engineering and scientist:22.5m); R&D is 20.9m (engineering and scientist: 19.4m) ;full-time R&D:12.5M (engineering and scientist :11.6M)
Technology funds	Total:344.4b, mainly from national science funds、973 plan、863 plan、national technology plan and enterprises、local department so on
R&D institution	Number of institution:3332, number of R&D:6.6M(high position:2.4M, graduate:10.6m)
Technology project	Total:19.2m (R&D:15.8M, NON-R&D:3.4M) ; funds:252.7B (basic research:22.0%, application research:58.6%, development and experiment:19.4%)
International communication	National academic conference:5.7m, academic paper:4.0m; domestic academic conference:4.0m, paper:2.7m; visitor scholar:2.0m, ; go abroad:11.73m.
Awards and patents	National science:18、national technology invention:12、national technology Advance award:102; technology monograph:2700, international academic paper(EI/SCI/ISTP): 42.8m; technology project: 7300; patents:1.5m



interdisciplinary development

1. discipline intercross

demonstration: intercross center

2. discipline cluster

demonstration: national emphasis lab

3. discipline converge

Demonstration: innovation platform



problems

- 1.the old mechanism
- 2.repeat and waste(about the experiment Facility)
- 3.limitation and less success
- 4.lack of innovation leader



improvement

- (1) conception innovation- build synthesis innovation platform;establish inter-discipline institution;
- (2)capability innovation-cultivate platform pioneer;
- (3)the management of innovation platform facilities-concentration、 share、 optimize、 improve;
- (4)technological innovation-put education、 research、 manufacture together ,accelerate the relationship among the universities, enterprises 、 industry and research center.;



improvement

- (5) mechanism innovation-include the management mechanism(consist of council, professional committee and management committee)、 organization structure、 human resource 、 operation system、 performance management;
- (6) The globalize of innovation platform.



demonstration

- ✓ Altogether in the “985 engineering”, 38 universities apply for 443 innovation platform .
- ✓ ZheJiang University:
information technology and control system platform 、 mechanism system and equipment platform、 function material platform 、 agriculture biology and environment platform 、 medicine technology and disease control innovation platform

SCINENCE AND TECHNOLOGY PLATFORM	SCALE	STUFF	REASERCH
INFROMATIO N AND CONTROL	National emphasis discipline:3 Emphasis lab:2 International college:1 National project:100 more National awards:10 more Technology funds:1.2b Construction funds:3.2b Experiment platform(5000M ²):3 Development platform(2000 M ²):2 Research institution:1 Stuff:500	Professor:103 Assistant Professor:158 International scholar:1 Academician:4 PHD:800 Master:1800	Intellectualized Image and complex information; Virtual reality; Computer graph; Science of light and information; Photons synthesize; Sensor technology and information management; Complex system decision and control; Embedded system
AGRICUTURE AND ENVIROMENT	National emphasis discipline:1 Emphasis lab:7 Open lab:4 National project:100 more National awards:10 more Technology funds:3b Construction funds:1.8b Experiment platform(4000M ²):1 Special economic material source garden:1 Stuff:500	Professor:125 International scholar:3 Academician:1 PHD:841 Master:1070	The control of animal product quantity; agriculture resource integration and information management; The mutation and control of biology; The pollution and environment control; food safety
MECHANISM SYSTME AND EQUIPMENT	National emphasis discipline:4 Emphasis lab:3 National engineering research center:4 National project:10 more Construction funds:1.5b Experiment platform(3000M ²):1 Stuff:400	Professor:105 International scholar:5 Academician:3 PHD:830 Master:1200	High-capability mechanism system and basic technology of equipment; Important whole-set equipment and high-technology equipment; Information and digital technology of mechanism system and equipment design
FUNCTIONAL MATERIAL	National emphasis discipline:1 Emphasis lab:7 National project:30 more Construction funds:1.5b Experiment platform(4000M ²):1 Stuff:1200	Professor:120 International scholar:2 Academician:7 PHD:800 Master:780	Silicon and semiconductor material New information function material Energy sources material Basic research of functional material
Medicine technology and disease control	National emphasis discipline:42 Emphasis lab:11 Research base:13 National project:40 more Construction funds:1.5b Experiment platform(5000M ²):1 Stuff:800	Professor:108 International scholar:2 Academician:3 PHD:840 Master:700	Microbe, micro-environment, microbe disease and immunology Important disease gene and protein procreation and heredity Transplant medical and cell organization Brain medical and nerve disease



Current research

- ✓ Focus on the domestic innovation platform(Zhejiang university,Tsinghua university)
- ✓ Working document:
The construction of innovation platform.
The ministry of national education.2005.3
- ✓ Paper:
[1]Foster inter-discipline and construct innovation platform.
High education in China.2005.5
[2]Emphasis the discipline (technology) integration and strengthen
technology innovation.
The research on high education.2005.5



Further research

- What are the main factors which forbid the construction of innovation platform.

The old mechanism(management,evaluation)

- What are the dynamic mechanism of innovation platform.
- Compare the foreign successful innovation platform and sum up the success experience .
- How to converge the technology and discipline better?

Marketing, information, collaboration



THANK YOU!

Welcome to China!